

A Polarized View on Terrestrial Exoplanets

Daphne Stam

(Email: dstam@science.uva.nl)

Astronomical Institute “Anton Pannekoek”, University of Amsterdam,
Amsterdam, The Netherlands

Stellar light that is reflected by a planet can be significantly polarized. Like the reflected flux, the degree of polarization of the reflected starlight depends on the wavelength, the illumination and viewing angles, the composition and structure of the atmosphere, and, in the case of terrestrial planets, the reflection properties of the planetary surface. With numerically simulated flux and polarization spectra of an exo-Venus, exo-Earth, and exo-Mars, viewed under various phase angles, we'll address similarities and differences between using photometry and polarimetry for exoplanet observations. In particular, polarimetry proves to be a powerful tool not only for detection of terrestrial exoplanets, but also to distinguish different types of planets, because the degree of polarization of the reflected starlight appears to be more sensitive to planetary characteristics than the flux.

